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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/576,198	02/16/2007	Bruno Manuel Numes Ramos De Carvalho	P-8732-US	6991

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EXAMINER	
ZEC, FILIP	

ART UNIT	PAPER NUMBER
3744	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/576,198	NUMES RAMOS DE CARVALHO ET AL.	
	Examiner	Art Unit	
	Filip Zec	3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 February 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10 and 12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 April 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/6/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 2 and 8 are objected to because of the following informalities: Claim 2 recites "an electric bus connector" in line 2 and claim 8 recites "a microcontroller" in line 2. Claim 1 already establishes antecedent basis for said limitation and said claims should read - - the electric bus connector - - and - - the microcontroller - -, respectively. Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,148,002 to Kuo et al. (Kuo) in view of U.S. Patent Re. 36,808 to Caldwell (Caldwell) and U.S. Patent 4,404,460 to Kerr (Kerr).

In reference to claim 1, Kuo discloses an autonomous garment (entire FIG. 1A) with active thermal control (col 2, lines 30-35) and powered by solar cells (col 10, lines 3-5), comprising a plurality of solar cells (col 10, lines 3-14); a plurality of batteries (192, FIG. 8B); a plurality of resistors (102, FIG. 3B); a plurality of Peltier cells (col 11, lines 15-30); a microcontroller (130, FIG. 9 and 318, FIG. 11; col 13, lines 9-12); a plurality of pipes (83, FIG. 2C), a plurality of thermal sensors (202 and 208, FIG. 9) and a plurality of plugs (104, 182 FIG. 3A and 8A), but does not teach a refrigeration cycle and an electric bus connector. Caldwell shows a garment with temperature regulation (12a and 80, FIG. 1 and 4) which utilizes a

refrigeration cycle (cryogenic system with a heat exchanger 18, FIG. 1 and 4; col 4, lines 38-48) in order to provide a portable life support system, from an environmental control perspective, having body temperature regulation and a breathable atmosphere for the users in extreme environments like fire fighting, underwater and hazardous material handling (col 1, lines 17-25) or to serve as a backup cooling source in case of Peltier cells failure. Kerr shows a temperature controllable suit (FIG. 2) which uses bus connections as electrical connections between the heaters and power supply (col 2, lines 41-65 and col 3, lines 1-10) in order to provide the user a modulated garment system with quick disconnect for wires for overheat prevention (col 3, lines 8-10).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Kuo, to include a garment with temperature regulation which utilizes a refrigeration cycle, as taught by Caldwell, in order to provide a portable life support system, that serves as a backup cooling source in case of Peltier cells failure and to use bus connections as electrical connections between the heaters, coolers and power supply, as taught by Kerr, in order to provide the user a modulated garment system with quick disconnect for wires for overheat prevention.

In reference to claim 9, Kuo, Caldwell and Kerr teach the garment as explained in the rejection of claim 1, and Kuo teaches that the microcontroller includes means to display data (132, FIG. 11) and software (302, FIG. 11) to control the thermal parameters (col 13, lines 9-13 and FIG. 11).

In reference to claim 10, Kuo, Caldwell and Kerr teach the garment as explained in the rejection of claim 1, and Kuo teaches that the solar cells are adapted to convert radiation from

fire to electric power (inherent since the solar cells are constructed in a manner which allows said cells to utilize any light source for power conversion, for instance lamp light)

4. Claim 2-8 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuo in view of Caldwell and Kerr as applied to claim 1 above, and further in view of U.S. Patent 4,642,413 to Ovshinsky (Ovshinsky).

In reference to claim 2, Kuo, Caldwell and Kerr teach the garment as explained in the rejection of claim 1, and Kuo teaches that the solar cells are on the outer shell of the garment (col 10, lines 7-8), but do not teach that the solar cells are connected to the electric bus connector and include optical parts, a protection layer, and filters. Ovshinsky teaches a power generating optical filter (60, FIG. 6) comprising a protective layer (32 and 64, FIG. 6) and a solar cell (photovoltaic body 36, FIG. 6) in order to provide a desirable, pre-selected optical transmission and/or absorption and effectively utilize a portion of preselected wavelengths of the non-transmitted light for the productive generation of electrical power (col 5, lines 56-63) and providing charge for the battery (col 17, lines 62-65). Additionally, Ovshinsky teaches that where large area substrates are employed, an electrically conductive bus-grid pattern may be placed in electrical contact with one of the electrodes for the more efficient withdrawal of photo-generated current (col 7, lines 35-39).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Kuo, Caldwell and Kerr, to include a power generating optical filter comprising a protective layer and a solar cell, as taught by Ovshinsky, in order to provide a desirable, pre-selected optical transmission and/or absorption for protection of the garment with respect to the fire/sun and effectively utilize a portion of preselected

wavelengths of the non-transmitted light for the productive generation of electrical power (col 5, lines 56-63) and providing charge for the battery and to use electrically conductive bus-grid pattern in electrical contact with the power consumer for the more efficient withdrawal of photo-generated current.

In reference to claim 3, Kuo, Caldwell, Kerr and Ovshinsky teach the garment as explained in the rejection of claim 1, and Kuo teaches that the batteries are embedded in the garment (inside of the belt 50, FIG. 1A; col 9, lines 40-47), but do not teach that the batteries are connected to the electric bus connector. Ovshinsky teaches that where large area substrates are employed, an electrically conductive bus-grid pattern may be placed in electrical contact with one of the electrodes for the more efficient withdrawal of photo-generated current (col 7, lines 35-39).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Kuo, Caldwell and Kerr, to use electrically conductive bus-grid pattern in electrical contact with the batteries, as taught by Ovshinsky, in order to provide more efficient withdrawal of photo-generated current.

In reference to claim 4, Kuo, Caldwell, Kerr and Ovshinsky teach the garment as explained in the rejection of claim 1, and Kuo teaches that the set of resistors are embedded in the garment (col 6, lines 20-30), but do not teach that said resistors are connected to the electric bus connector for delivery of heat. Ovshinsky teaches that where large area substrates are employed, an electrically conductive bus-grid pattern may be placed in electrical contact with one of the electrodes for the more efficient withdrawal of photo-generated current (col 7, lines 35-39).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Kuo, Caldwell and Kerr, to use electrically conductive bus-grid pattern in electrical contact with the resistors, as taught by Ovshinsky, in order to provide more efficient withdrawal of photo-generated current.

In reference to claim 5, Kuo, Caldwell, Kerr and Ovshinsky teach the garment as explained in the rejection of claim 1, and Kuo teaches that the Peltier cells are embedded in the garment (col 6, lines 26-28) and are distributed in the garment to produce heat and cold, but do not teach that said Peltier cells are connected to the electric bus connector. Ovshinsky teaches that where large area substrates are employed, an electrically conductive bus-grid pattern may be placed in electrical contact with one of the electrodes for the more efficient withdrawal of photo-generated current (col 7, lines 35-39).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Kuo, Caldwell and Kerr, to use electrically conductive bus-grid pattern in electrical contact with the Peltier cells, as taught by Ovshinsky, in order to provide more efficient withdrawal of photo-generated current.

In reference to claim 6, Kuo, Caldwell, Kerr and Ovshinsky teach the garment as explained in the rejection of claim 1, and Kuo teaches that the pipes distributed in the garment (82 and 83, FIG. 2A and 2C), while Caldwell shows a garment with temperature regulation (12a and 80, FIG. 1 and 4) which utilizes a refrigeration cycle (cryogenic system with a heat exchanger 18, FIG. 1 and 4; col 4, lines 38-48), but they do not teach that said refrigeration cycle is connected to the electric bus connector. Ovshinsky teaches that where large area substrates are employed, an electrically conductive bus-grid pattern may be placed in electrical contact with

one of the electrodes for the more efficient withdrawal of photo-generated current (col 7, lines 35-39).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Kuo, Caldwell and Kerr, to use electrically conductive bus-grid pattern in electrical contact with the elements of the refrigeration cycle, as taught by Ovshinsky, in order to provide more efficient withdrawal of photo-generated current.

In reference to claim 7, Kuo, Caldwell, Kerr and Ovshinsky teach the garment as explained in the rejection of claim 1, and Kuo teaches thermal sensors (202 and 208, FIG. 9), but they do not teach that said device is connected to the electric bus connector. Ovshinsky teaches that where large area substrates are employed, an electrically conductive bus-grid pattern may be placed in electrical contact with one of the electrodes for the more efficient withdrawal of photo-generated current (col 7, lines 35-39).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Kuo, Caldwell and Kerr, to use electrically conductive bus-grid pattern in electrical contact with the thermal sensors, as taught by Ovshinsky, in order to provide more efficient withdrawal of photo-generated current.

In reference to claim 8, Kuo, Caldwell, Kerr and Ovshinsky teach the garment as explained in the rejection of claim 1, and Kuo teaches the microcontroller (130, FIG. 9 and 318, FIG. 11; col 13, lines 9-12) connected (see FIG. 9 and 11) to the resistors, Peltier cells, batteries, solar cells, and refrigeration cycle (per teachings of Caldwell), for the active thermal control of the garment, but they do not teach that said devices are connected to the electric bus connector. Ovshinsky teaches that where large area substrates are employed, an electrically conductive bus-

grid pattern may be placed in electrical contact with one of the electrodes for the more efficient withdrawal of photo-generated current (col 7, lines 35-39).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Kuo, Caldwell and Kerr, to use electrically conductive bus-grid pattern in electrical contact with the power consumer devices (resistors, Peltier cells, batteries, solar cells and elements of the refrigeration cycle), as taught by Ovshinsky, in order to provide more efficient withdrawal of photo-generated current..

In reference to claim 12, Kuo, Caldwell, Kerr and Ovshinsky teach the garment as explained in the rejection of claim 2, but they do not teach that the filters have a geometry optimized for the solar spectrum. Ovshinsky teaches a power generating optical filter in order to, among other things, eliminate the harmful ultraviolet wavelengths of the solar spectrum (col 2, lines 25-27). Since the amount of absorbed radiation is directly proportional to the surface area of the filter, said filter is recognized as the result effective variable and thus, one of ordinary skill in the art would find it obvious to optimize the geometry of the filter to reduce the ultraviolet radiation experienced by the garment user.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Kuo, Caldwell, Ovshinsky and Kerr, to optimize the geometry of the filter in order to reduce the ultraviolet radiation experienced by the garment user.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 3,049,896 to Webb teaches personnel isolation and protection systems.

U.S. Patent 4,470,263 to Lehovec et al. teaches Peltier cooled garment.

U.S. Patent 5,375,429 to Tokizaki et al. teaches method and apparatus for controlling an air conditioner with a solar cell.

U.S. Patent 6,158,225 to Muto et al. teaches automotive air conditioning apparatus.

U.S. Patent 6,163,368 to Khoury teaches Spectroscopic time integrative correlation for rapid medical diagnostic and universal image analysis.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Filip Zec whose telephone number is 571-270-5846. The examiner can normally be reached on Monday-Friday, from 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisors, Frantz Jules or Cheryl Tyler can be reached on 571-272-6681 or 571-272-4834, respectively. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Cheryl J. Tyler/
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Examiner, Art Unit 3744

3/23/2010